The True Mother of Invention

February 21st 2013

Value-**a**dding **I**ntegration - Concept and methods for successful low cost, fast improvement and innovation; and better collaboration

“Providing more opportunities for collaboration is **key** to achieving Space Life Sciences goals"

Dr Jeffrey R. Davis, MD,

Director, Space Life Sciences, NASA

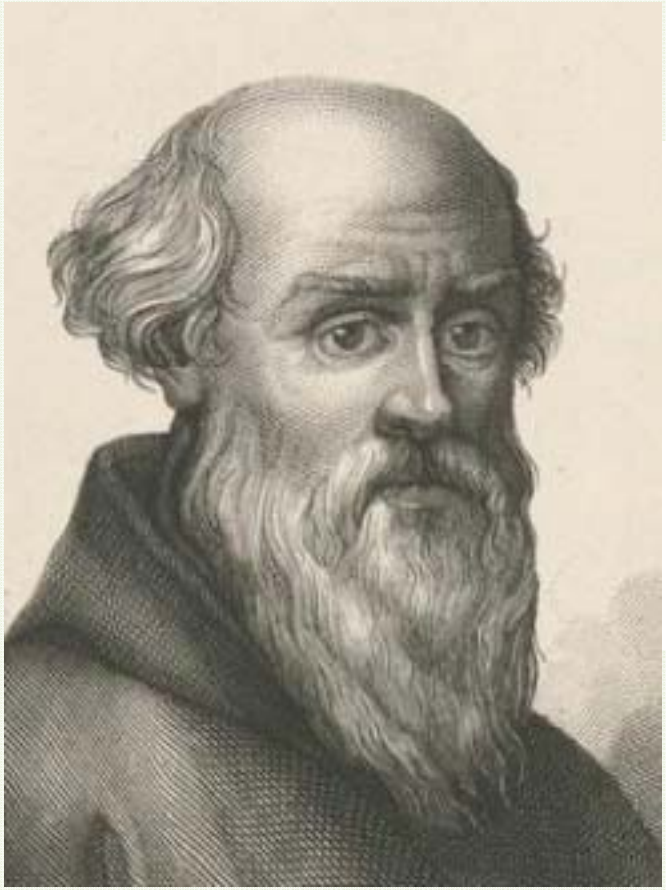
Johnson Space Center

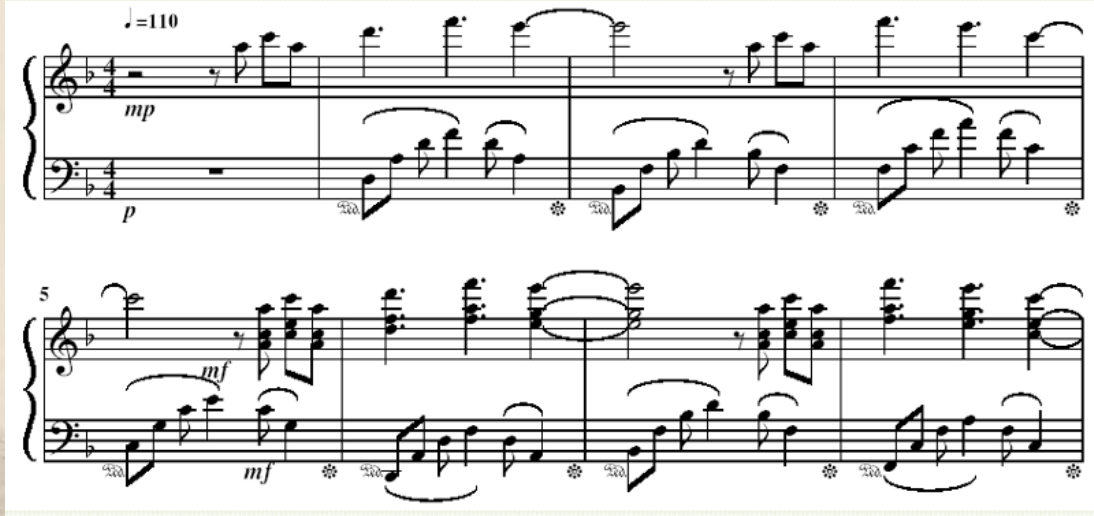
About us (and me)

- Green Leader Limited
  Rail electrification consulting engineers
  - 14 years of virtual operations
  - Value-adding Integration approach to business

- CEO and founder (poor hearing)
  - Engineer (electrical/electrification)
  - Voluntary work in rare diseases
    - Barth Syndrome Foundation Inc. (virtual working)

Music to your ears





Aims of Presentation

- Make Value-adding Integration Methodology accessible and value-adding to NHHPC members*
- Start discussion and sharing of innovation methodologies*
- Encourage new/better methodologies*

*These are all **V**alue-**a**dding **I**ntegration (VAI) type activities

Why Use a Methodology?

To make innovation and improvement

- Easier
- More productive
  - Better outcomes
  - Faster
  - Lower risk
  - Lower process cost
- More fun (for everyone involved)

Value-adding Integration is bringing closer together in ways that add further value

- Thru' Integration of value/value-adding part(s)
  - Better end result is obtained
  - Waste/cost and workloads reduced
- Opportunities for further enhancements arise
  - Integration adds value in its own right
  - Creates new situation for further improvement
- Problems at interfaces are reduced or eliminated

Definitions

- Value: end-user defined value/worth
  - Recognized as need, want, perception, utility, functionality etc.
- Value-adding: creates or enhances value
  - Provided by utility, functionality, feature, performance etc. (existing in value-adding elements. e.g. in products or services)
- Value-adding activity/process: needed to provide value
- Non-VA activity/feature: no value to end-user
- Integration: better value-adding 'fit' or co-ordination
  - With end-user values, perceptions, needs etc.
  - Other VA activities (in a process)

Value-adding Interfaces

- Value occurs at interface - VA elements meet here
  - Between: product (or activities)/end-user; process stages or activities; parts; patients/their world etc.
  - Value can be created or lost here
  - Interfaces are often overlooked area, problems occur
- Integration changes interface or creates new interface with potential for adding more value
- Interfaces exist within end-user's 'Big Picture'

Summary – Main Principles

- Value is only added at the Value-adding Interface
  - Better integration reduces costs/wastage, enhances end-user value
- The end-user's 'world' (or Big Picture) defines 'value'
  - VAI can help in understanding end-user's 'world' and identify value
- Successful innovation/improvement arises from better Value-adding Integration with end-user's world
  - Risks from innovation are substantially reduced
- Innovative integration leads to further opportunities for adding value
  - New situation created at substantially reduced cost and risk

Carrying out Value-adding Integration

- Step 1 Develop Value-adding Integration proposals*
  (Work around value-adding interfaces: create, understand and make them work better)
- Step 2 Check proposals for technical/commercial compliance/expectations*
- Step 3 Check successful fulfilment assurance*

**Overall you are trying to :*

Identify (e.g. the problem, or opportunity)
Analyse (e.g. the problem, or opportunity)
Innovate or improve, devise a solution with added-value
Make it work, in accordance with your definition of success

STEP 1 Develop VAI Proposals

- Place within ‘Big picture’
  - Examine end-user (or next user) needs, wants etc.
  - Examine next activities (in process)
  - Characterize (key) interfaces (create/add V, problems)
- Use VAI tools, e.g. (as appropriate):
  - Internet
  - Integration workspace, Integration plan
  - Time, VA, Interface Analysis; eliminate Non-VA activity
- Achieve better VAI ‘fit’ (fit, form, function), or co-ordinate with (1) end-user (2) other VA activities

STEP 2 Check compliance

- Check technical/commercial compliance
  - Against requirements, specification, statutory etc.
  - Against (precise) expectations (of end-user, etc.)
  - Review cost/price and/or value for money, viable?
- Resolve any remaining issues
- If important issue unresolved consider alternatives (failure is not one of them)

STEP 3 Assurance

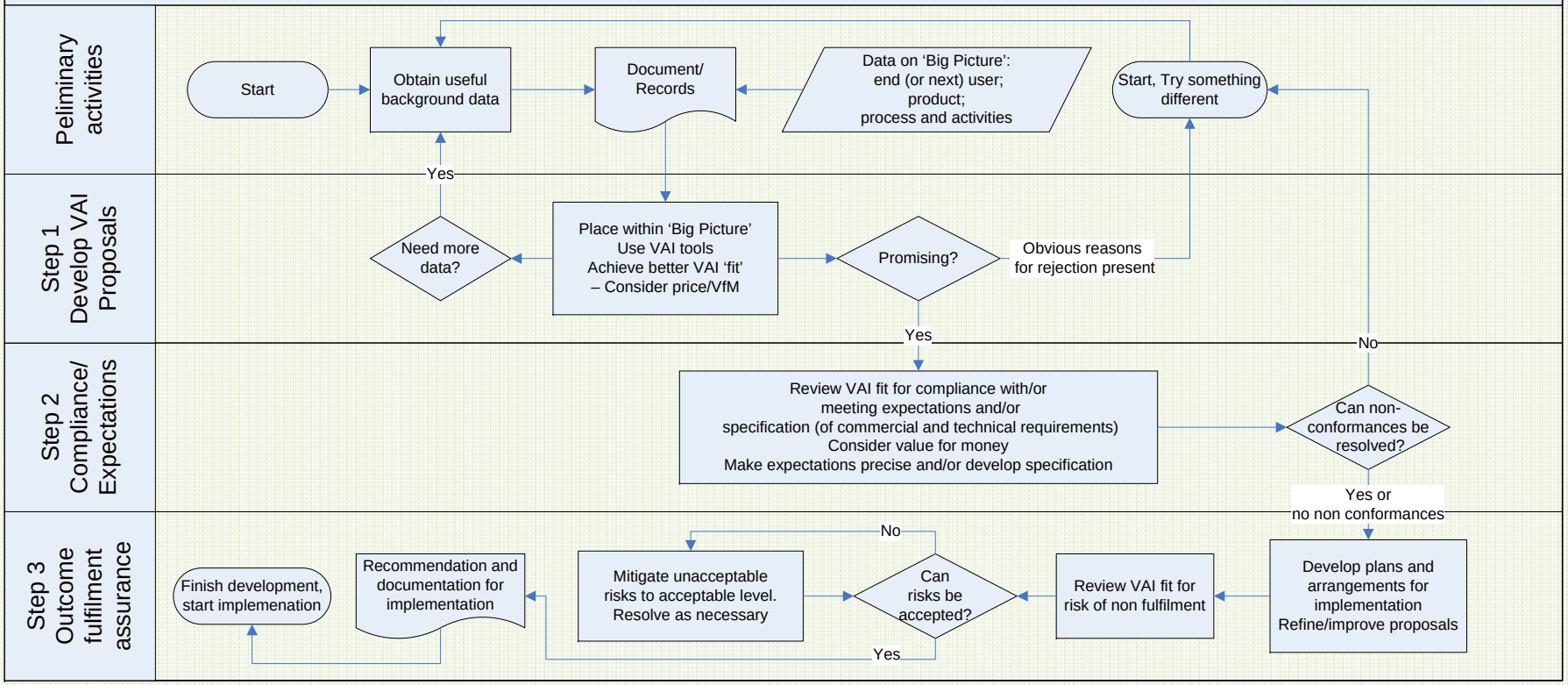
(successful outcome fulfilment assurance)

- Check what is proposed to deliver outcome
  - Assess risks and mitigation measures
  - Review Management plan/arrangements, resourcing, delivery methodology etc.
  - Refine and improve, reduce negative side-effects
- Unacceptable residual risks, consider alternatives

Flow Chart of VAI

Value-adding Integration – low cost, fast improvement and innovation

Facilitating competitive advantage, better public services, improved healthcare and faster translational research (for RDs)



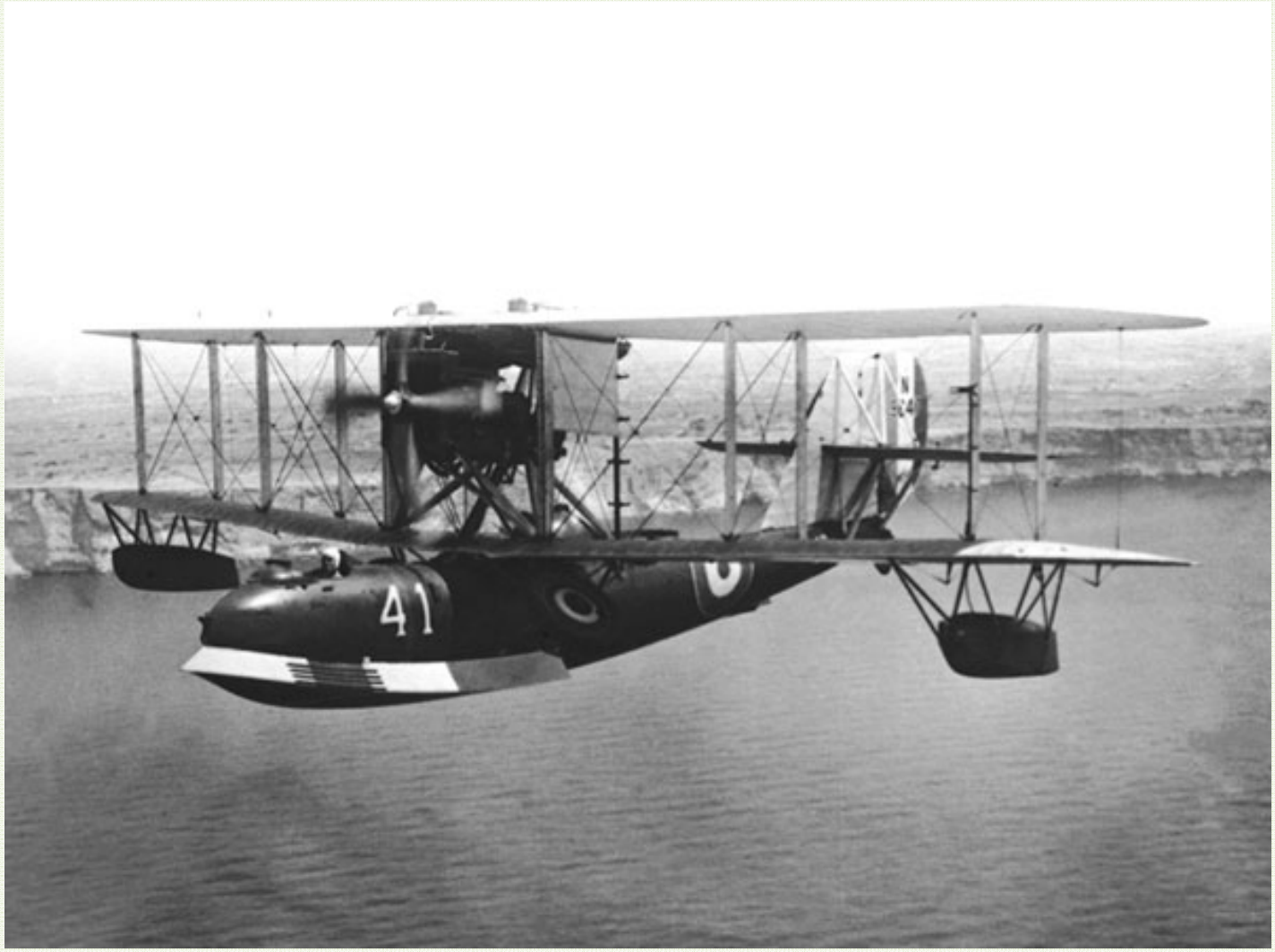
Competitive advantage through new and better products delivering genuine unique selling propositions (USPs) and at lower costs.
Better Public Services through better more beneficial integration with end-users and more efficient processes.
Improved healthcare (on rare diseases) through patient engagement, sharing ideas, collaboration, access to data and treatments, and more efficient, effective delivery
Faster translational medical research (on rare diseases) through enhanced creativity, sharing ideas, collaboration and access to patients, data and treatments

Examples – (VAI can be fun)

- 'The Rocket' (early steam locomotive and benchmark)
- Seagull to Spitfire (planes - RJ Mitchell lead designer)
- Sandwich (food for thought)
- BSF's doctors' and parents' private listservs
- Music (to your ears – much VAI during development)

The Rocket

The Seagull



The S6b Racing Seaplane

The Spitfire - fighter

Examples 2

- This presentation
  - You are part of the presentation
  - Use of Internet (as VAI tool) to:
    - Present more information, get feedback
  - Trial with test pilot led to many changes
  - Future use with Integration space and Internet (as VAI tools integrating, people, methodology and info):
    - To solve problems

Examples 3

- Invention or scientific discovery came first
  (curiosities until Value-adding Interfaces and VAI emerged)
  - Electricity
  - Post-it® glue

- In-house end-user development
  (unglobalized unless Value-adding Interfaces and VAI emerge)

Examples 4

- Improving Process and Product (outcome from process)
  - Streamlined Tender Evaluation (STEP)
    - Changes a mainly non-VA activity into a VA activity
    - Focuses on getting products better than specified (with reduced risk to a successful outcome)
    - Permits better engagement with innovative SMEs
    - Reduces workloads and stress on buyers and suppliers (typically 70-80% saving on time and effort)

Advantages of VAI Methodology

(Unique Selling Propositions - USPs)

Overview of Potential Outcomes

- Better products and public services; lower cost
- Process improvements and efficiencies
- Reduced innovation associated risks
- Reduced wastage and environmental impact
- Improved working environment
- Help with problematic situations (next slide)
- Faster (overall) research progress

Problematic Situations

- VAI can help produce better outcomes where:
  - Remote or virtual working is difficult:
    - Co-ordination, understanding, duplication etc.
  - Interface problems exist between:
    - Product - user (usability, functionality, performance etc.)
    - Stages of an overall process (delays, errors, losses etc.)
    - Patients and environment (quality of life - rare diseases)
  - Available resources and funding are limited
  - Competing at a disadvantage, typically:
    - Size, market standing, new entrant, costs

USPs of VAI

- Better products and services
  - Identifies (new) place(s) of value (at interfaces)
  - Improvement (often) low cost, low risk, in-house
  - Greater focus on customer, client
  - Reduced wastage and environmental impact
  - Further potential for adding value (at interfaces)

USPs of VAI

- More efficient activities and processes
  - Reduced non-value-adding activity, time, costs
  - Reduced interface problems
  - Improvement (often) low cost, low risk, in-house
  - Reduced wastage and environmental impact
  - Further potential for process improvement (at or near interfaces)

USPs of VAI

- Risks to successful outcome reduced
  - Assessing risks directly
  - Assessing pro-active measures – forward looking
- Applicable to new businesses
- Applicable to innovations
- Fits in with later Plan, Do, Check, Action cycle (during implementation of proposals)

USPs of VAI

- Reduces waste and environmental impact
  - Clear definition of wastage and non-VA activity
  - Wastage identified (through clear definition)
  - VAI focus eliminates/reduces wastage (and non-VA activity)

USPs of VAI

- Improved working environment
  - Reduced non-value-adding workloads
  - Less interface fire-fighting and problems
  - Less stress on individuals (emphasis on process)

  - Reduced risk of failure (below expectations)
  - Potential for more individual contribution
  - Higher morale/confidence and espirit de corps

USPs of VAI

- Simple (unified approach), flexible and fast
  - Reduced time, effort and resources to apply
  - Increased likelihood to find/correct problems
  - Promotes efficiency and adding more value
  - Reduced risk of failure (below expectations)

USPs of VAI

- Facilitates:
  - Customer/client focus (for activities)
  - Creativity and ideas (outside existing paradigms)

    (see also next slide)

  - Analysis (into VA and non-VA elements)
  - Collaboration, co-ordination
  - Finding new opportunities (low cost, low risk)

USPs of VAI

- Creativity and thinking outside the box
  - Creates pathway into new and novel VA situations
  - Moves discussion, analysis, creativity to new situation
  - Challenges 'reality' (knowledge, assumptions, invention)
  - Provides basis for imaginative collaboration on:
    - Finding and refining product features (or utility etc) to add
    - Discovering items (eg features, utility or stages etc) to omit
    - Developing next steps

USPs of VAI

- Education and training
  - Greater understanding of end-user, next-user perspective(s), needs, wants etc.
  - Greater understanding of VA and non-VA
    - In product and service features
    - In activities and processes
    - In healthcare and quality of life issues (rare diseases)
- Helps non-specialists
- Faster learning through cross-pollination

USPs of VAI

- Easy and fast to implement
  - Flexible, can be adapted to situation
    - Apply to selected areas/problems
  - Fast training and learning
  - Integrates with existing improvement efforts
  - Uses VAI to adapt and improve application of VAI principles and methodology to each situation
    - Includes some automatic or self-adaptation

USPs of VAI

- 'Reaching-Out' & altruism: mutually beneficial
  - Business ⟺ Public Sector interchange
  - Business or Public ⟺ Healthcare interchange
  - Business or Public ⟺ Med. Research interchange

(Interchange is facilitated; the more you do the more benefit you and others get through cross-pollination and changed paradigms)

USPs of VAI

- Improved healthcare (rare disease patients)
  - Few patients, clinicians, (widely dispersed)
    - Easier access to resources, data and data collection
    - More effective dissemination of information (symptoms, treatments, latest research)
  - Better patient and 'quality of life' engagement
  - Identify and prioritize highest VA activities
  - Reduce non-VA activity and overall costs
  - Facilitate collaboration, discussion and ideas

USPs of VAI

- Faster translational medical research
  - Rare diseases: few patients, clinicians, researchers
    - Easier access to resources, data and data collection
    - More effective dissemination of information (symptoms, treatments, latest research)
  - Facilitate collaboration, discussion and ideas
  - Reduce non-VA time periods in overall progress

USPs of VAI

- Subtle beneficial effects present
  - For personnel to facilitate improvement activity
    - Reduces their workload, improves their work environment
  - For personnel to be proactive for assurance
  - Scalable to complexity, innovativeness of task
  - Changes mind-sets and expectations, including:
    - Attenuates insularity (‘not invented here’, cliquishness)
  - Better understand social/public service aspects
  - For patient/clinician dialogue (VA in healthcare)

USPs of VAI

- Innovative Pricing, Risk Management/Sharing
  - Additional information available (from VAI) on:
    - Risks to a successful outcome (contract, project etc)
    - Proactive management for a successful outcome
    - Risk mitigation measures (existing and proposed)
  - Potential to:
    - Reduce risk premium (fixed price)
    - Accurately monitor rate prices against progress
    - Risk share between buyer and supplier
    - Apportion contract to fixed and rate prices segments
    - Incentivise against goals

Questions?

How did VAI Methodology arise?

- Participation in UK Gov. CO SME Test Group
  - Saw need for Streamlined Tender Evaluation and use for method of developing USPs: simple, low cost
- Translational needs of rare disease research
  - Barth Syndrome Foundation USA/Trust UK
  - Looking for ways to get more from limited funds
- Green Leader Limited experiences (SME)
  - Problems at system, contractual, operating, man-machine interfaces and with complex procurement

FAQs on VAI

Existing methods are just as good?

VAI uses some existing improvement ideas, concepts and methods and adds new concepts to them (focusing on VA and interfaces) to achieve better overall results - better products, services and healthcare (for rare diseases) at lower costs.

VAI is likely to help where previous improvement efforts have delivered disappointing/costly results.

FAQs on VAI

What is new, different or better about VAI?

Uses common (unified) approach to product and process improvement, and interface problems – VA + lower costs.

Focus on interfaces: place where value occurs and has potential for adding more value in the new situation created.

Additional due diligence and refinement stages in methodology.

Uses VAI to adapt and improve itself to each application – potentially lower cost, better and faster results.

Mutually beneficial cross-over between needs/solutions of business, public sector and healthcare & translational research (rare diseases).

FAQs on VAI

Differences from Lean?

Adds VA focus for better product, service and (RD) healthcare outcomes

Addresses interface integration issues

Different language directly related to subjects being investigated

Differences from Six Sigma, Quality Improvement?

Adds VA focus for better product, service and (RD) healthcare outcomes

Addresses interface integration issues

Different language directly related to subjects being investigated

FAQs on VAI

How do you measure or determine value?

End-user/patient decides value; compared quantitatively or qualitatively against cost, beneficial effects or other sources of value.

No significant USPs or a Commodity product?

Significant USPs could still be identified using VAI even with commodities

FAQs on VAI

Too many USPs identified?

Good news, rank and evaluate

Some may not be real ‘U’SPs or beneficial

USPs cost more?

Sometimes – calculate Vfm (to customer/end-user)

(Vfm – value for money)

Socio economic criteria (SEC)?

Ranking USPs can include SEC and G’ment policy

FAQs on VAI

What are the risks (of failure of VAI process)?

Inaccurate and/or inadequate input data

Steps 2 and 3 not carried out adequately

Unrealistic expectations

Low personnel commitment (to success)

Poor follow-up during implementation stages

What if data/feedback from end users/patients is unhelpful?

Focus on interfaces, (including creating and enhancing value and problems present); helps to identify useful questions to ask end-users/patients and verify feedback received.

FAQs on VAI

Too complex/novel to work (in my organization)?

Needs a plan and 'success factors' in place – SFs = motivation, supportive framework, competency, management deployment

Anything else critical to success (of VAI)?

Precision, resolution and empathy

FAQs on VAI

How much VAI is already happening?

Many successful (partial) examples exist – modern trend already well established. You have probably done some aspects of VAI.

Examples tend to be piecemeal and/or partial applications without the use of a systematic methodology and language.

FAQs on VAI

How easy/quick is using VAI?

Everyone is different, concept is simple, techniques exist to help easy/quick training (pilot or rollout)

Will my personnel co-operate?

For them – obvious benefits, less work and can showcase delivering better value and VAI activity

Costs to implement (across organization, product)?

Low, varies – would need to estimate for each use

FAQs on VAI

More background available?

Much, including underlying theory, assumptions

Is there something better we can use?

Not yet – needs more VAI to develop pipeline

How could VAI methods improve?

Use VAI, adapt to needs/requirements and tell us your priorities, needs and problems

Getting Started

VAI Getting Started

- Use a pilot/trial
- Use for small improvements first
  - Less risk, lower cost
  - Faster to introduce
- Adapt to required application(s)
  - Use VAI to improve use/suitability of VAI methods

Presentation – For your future use

(see slide footer color)

- NHHPC aims : slides 5-6
- How to use VAI methodology : 7-15
- Business case input/advantages : 24-41
- Drilling down further : 42-53
- Other background : 3-4, 16-23
- Getting started : 54-59

Follow up

- Further Information for NHHPC Members
  - Value-adding Integration download on NHHPC website
  - Ask questions (or make comments)
  - Discussion (please contribute your ideas on innovation)
  - Leave VA feedback (to integrate with NHHPC aims)

- Acknowledgements and Thank You
  - Barth Syndrome Foundation Inc.
    - Virtual community – truly inspirational achievements (from nothing when faced with personal tragedies)
    - Contact (for info, to help or donate www.barthsyndrome.org)
  - NASA
    - Helping to make the future, today (special thanks to NHHPC team)
    - Showing that 'the sky is not the limit'

Further Information

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Thank you for participating

The VAI Methodology is a tool, and cannot achieve anything by itself. (apply Step 1)

Where vision is greatest, achievement is greatest. (subject to Steps 2 and 3)